

**AMENDMENTS TO THE DRAWINGS**

The attached sheets of drawings includes changes to FIGURES 1, 3A-3B, 45, and 6.

Attachment:      Replacement sheets 1-4

### **REMARKS**

Applicant hereby traverses the current objections and rejections, and requests reconsideration and withdrawal in light of the amendments and remarks contained herein. Claims 1-34 are pending in this application.

### **Abstract**

The Office Action has requested that the Applicant review the Abstract in view of the guidelines of the M.P.E.P. In response, Applicant has submitted the substitute Abstract as defined above. Applicant believes that the substitute Abstract complies the guidelines of the M.P.E.P.

### **Claim Objections**

Claims 2-4, 19-21, and 25-27 are objected to for informalities listed on page 3 of the Office Action. In response, Applicant has reviewed a dictionary, namely Webster's Ninth New Collegiate Dictionary, and notes that the term may be properly spelled as "multiplexor" or "multiplexer". Applicant has consistently referred to that elements as "multiplexor" in both the specification and draws. Thus, Applicant believes that no change to the claims is necessary. Applicant respectfully requests the withdrawal of the objection of record.

### **Drawing Objections**

The Office Action objects to the drawings, as having boxes without including descriptive text labels. Applicant cannot locate any basis in the M.P.E.P., rules, law, or case law for supporting such a requirement, and notes that the Office Action does not provide any such support. However, to advance prosecution, Applicant has amended the FIGURES to include such labels. Applicant has not amended boxes that are too small to have such labels, e.g. 105 of FIGURE 1, 311-313 of FIGURE 3A. Thus, Applicant believes that the objection to the drawings has been overcome, and that this objection should be withdrawn. Applicant also has changed "MAX" to "MUX" in FIGURES 2A and 2B.

**Rejection Under 35 U.S.C. § 112**

Claims 2-5 are rejected under 35 U.S.C. § 112, first paragraph as containing subject matter not found in the specification. Specifically, the Office Action states that the limitations N to M/2 multiplexing are not disclosed in the specification.

Applicant notes that the phrase “N to M/2”, as appears in claims 2-5 does not appear in the specification. However, Applicant respectfully reminds the Examiner that “[t]he subject matter of the claim need not be described literally (i.e., using the same terms or *in haec verba*) in order for the disclosure to satisfy the description requirement”, see M.P.E.P. § 2163.02. Applicant believes that one skilled in the art would recognize that given a variable “M”, the “M/2” is one half of M. Furthermore, Applicant asserts that the specification’s discussion of 2:1 multiplexors and 4:1 multiplexors appearing paragraphs [0021], [0030], is sufficient to clearly convey to one of ordinary skill in the art the invention that is claimed. Thus, Applicant respectfully requests the rejection of claims 2-5 under 35 U.S.C. § 112, first paragraph be withdrawn.

**Rejection Under 35 U.S.C. § 112**

Claims 15-16, 19-20, 22, 24, and 31 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

With respect to claims 15-16, the Office Action states that the words “should be” are indefinite. In response, Applicant has amended these claims to more clearly define the invention, specifically the claims now read “are to be”. The claims have been amended only for the purpose of complying with the requirements of 35 U.S.C. § 112, second paragraph, and not for the purpose of narrowing their scope in the face of prior art. No new matter has been entered.

With respect to claims 15-16, 19-20, and 24, the Office Action states that the word “thereby” is indefinite, and cites M.P.E.P. § 2173.05(d). Applicant respectfully notes that the word “thereby” is not exemplary language, and thus M.P.E.P. § 2173.05(d) does not apply. Applicant believes that the word thereby clearly defines that when the condition that precedes

“thereby” is satisfied, and the phrase that follows “thereby” is true. Thus, the word “thereby” is not indefinite.

With respect to claim 22, the Office Action states that the phrase “the two beam formers” lacks antecedent basis. Applicant respectfully notes that “two beam formers” are provided basis in line 1 of claim 22. Thus, the phrase “the two beam formers” used in line 3 of claim 22, and line 1 of claim 23 has proper antecedent basis.

With respect to claim 24, the Office Action states that the phrase “the platform” lacks antecedent basis. Applicant has amended claim 24 to recite “a platform using the method”. Thus, the phrase now has proper antecedent basis. The claim has been amended only for the purpose of complying with the requirements of 35 U.S.C. § 112, second paragraph, and not for the purpose of narrowing their scope in the face of prior art. No new matter has been entered.

With respect to claim 31, the Office Action states that the phrase “the control circuit” lacks antecedent basis. Applicant has amended claim 31 to recite “the beam former”. Thus, the phrase now has proper antecedent basis. The claim has been amended only for the purpose of complying with the requirements of 35 U.S.C. § 112, second paragraph, and not for the purpose of narrowing their scope in the face of prior art. No new matter has been entered.

As each element of indefiniteness cited by the Office Action has been addressed with a corresponding amendment or argument, Applicant respectfully requests the rejection of claims 15-16, 19-20, 22, 24, and 31 under 35 U.S.C. § 112, second paragraph be withdrawn.

#### **Rejection Under 35 U.S.C § 102**

Claims 1 and 12 are rejected under 35 U.S.C. § 102(b) as being anticipated by Tümer (US ‘648).

It is well settled that to anticipate a claim, the reference must teach every element of the claim, see M.P.E.P. § 2131. Moreover, in order for a prior art reference to be anticipatory under

35 U.S.C. § 102 with respect to a claim, “[t]he elements must be arranged as required by the claim,” see M.P.E.P. § 2131, citing *In re Bond*, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). Furthermore, in order for a prior art reference to be anticipatory under 35 U.S.C. § 102 with respect to a claim, “[t]he identical invention must be shown in as complete detail as is contained in the . . . claim,” see M.P.E.P. § 2131, citing *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913 (Fed. Cir. 1989). Applicant respectfully asserts that the rejection does not satisfy at least one of these requirements.

Claim 1, as now amended, defines a system that includes an application specific integrated circuit (ASIC) adapted for use in a plurality of systems, wherein the system is one of the plurality of systems, and each system has a circuit configuration that uses a different number of signal channels for further processing by said application specific integrated circuit. Tümer does not disclose these limitations. Tümer teaches a multichannel readout chip that can select channels for reading out. For example, Tümer teaches reading out only channels that have a signal. The channels that have signals would change over time. Nothing in Tümer teaches that the readout chip is useable in a plurality of systems, where each system uses a different number of signal channels. Applicant notes that multiple systems of Tümer would each have the same number of channels, and the readout chip would readout the channels having signals. Thus, Tümer does not teach all of the claimed limitations, and the elements are not arranged in the same manner as the claim. Therefore, the Applicant respectfully asserts that for the above reasons claim 1 is patentable over the 35 U.S.C. § 102 rejection of record.

Claim 12, as amended, defines a method that includes configuring an ASIC adapted for use in a plurality of systems, wherein each system has a circuit configuration that uses a different number of channels, to provide said determined number of channels. Tümer does not disclose these limitations. Tümer teaches a multichannel readout chip that can select channels for reading out. For example, Tümer teaches reading out only channels that have a signal. The channels that have signals would change over time. Nothing in Tümer teaches that the readout chip is useable in a plurality of systems, where each system uses a different number of channels. Applicant

notes that multiple systems of Tümer would each have the same number of channels, and the readout chip would readout the channels having signals. Thus, Tümer does not teach all of the claimed limitations, and the elements are not arranged in the same manner as the claim. Therefore, the Applicant respectfully asserts that for the above reasons claim 12 is patentable over the 35 U.S.C. § 102 rejection of record.

**Rejection Under 35 U.S.C. § 102**

Claims 25-29 and 32-33 are rejected under 35 U.S.C. § 103 as being anticipated by Knell et al. (US '213, hereinafter Knell).

In the rejection of claims 25-29 and 32-33, the Office Action states that the Examiner has taken official notice that multiplexing the transducer elements between the transducer elements and the beam former will decrease the number of information channels from the transducer element and the beam former inputs.” Under Rule 37 C.F.R. § 1.104(d)(2), the Examiner is hereby requested to provide and make of record an affidavit setting forth his data as specifically as possible for the assertion. Alternatively, under M.P.E.P. § 2144.03, the Examiner is hereby requested to cite a reference in support of the assertion. Otherwise the rejection of claims 25-29 and 32-33 should be withdrawn.

It is well settled that to anticipate a claim, the reference must teach every element of the claim, see M.P.E.P. § 2131. Moreover, in order for a prior art reference to be anticipatory under 35 U.S.C. § 102 with respect to a claim, “[t]he elements must be arranged as required by the claim,” see M.P.E.P. § 2131, citing *In re Bond*, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). Furthermore, in order for a prior art reference to be anticipatory under 35 U.S.C. § 102 with respect to a claim, “[t]he identical invention must be shown in as complete detail as is contained in the . . . claim,” see M.P.E.P. § 2131, citing *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913 (Fed. Cir. 1989). Applicant respectfully asserts that the rejection does not satisfy at least one of these requirements.

Claim 25 defines an apparatus that includes an ASIC in communication with the data path between the transducer and the beam former, including circuitry operable as a bank of multiplexors to decrease a number of the information channels from the transducer to the beam former. Knell does not disclose these limitations. Knell mentions that a derotation multiplexor may be used. The Examiner then takes notice that because there is a multiplexor, then the number of information channels is decreased. Applicant notes that the multiplexor of Knell is a derotation multiplexor that is used to handle a linear or curved transducer. Nothing is stated that the multiplexor needs to reduce the channels to address the linear or curved transducer. The other portions of Knell cited to support the assertion of the Office Action also do not provide the necessary teaching. Column 18, lines 26-45 discusses using timing delay devices and the derotation multiplexor. Column 13, lines 25-32 discusses delaying signals of different channels. Column 13, lines 42-45 discusses connecting inputs with outputs. Nothing in Knell, even with the supplement of official notice, teaches the limitations of the claim. Thus, Knell does not teach all of the claimed limitations, and the elements are not arranged in the same manner as the claim. Therefore, the Applicant respectfully asserts that for the above reasons claim 25 is patentable over the 35 U.S.C. § 102 rejection of record.

Claim 29 defines an apparatus that includes an ASIC in communication with the data path between the transducer and the beam former, including circuitry operable as a summer/cross-point switch, to route a number of information channels from the transducer to the beam former. Knell does not disclose a cross-point switch. The Examiner in rejecting claim 30 states that Knell does not disclose a cross-point switch, see page 22, line 16 of the Office Action. Furthermore, the citations provided by the Examiner do disclose a cross-point switch. Thus, Knell does not teach all of the claimed limitations, and the elements are not arranged in the same manner as the claim. Therefore, the Applicant respectfully asserts that for the above reasons claim 29 is patentable over the 35 U.S.C. § 102 rejection of record.

Claims 26-28 and 32-33 depend from base claims 25 and 29, respectively, and thus inherit all limitations of their respective base claim. Each of claims 26-28 and 32-33 sets forth

features and limitations not recited by Knell. Thus, the Applicant respectfully asserts that for the above reasons claims 25-29 and 32-33 are patentable over the 35 U.S.C. § 102 rejection of record.

### **Rejection Under 35 U.S.C. § 103**

Claims 2-9 and 14-21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Tümer in view of Angelsen et al. (US App. 2005/02003402, hereinafter Angelsen).

The test for nonobvious subject matter is whether the differences between the subject matter and the prior art are such that the claimed subject matter as a whole would have been obvious to a person having ordinary skill in the art to which the subject matter pertains. The United States Supreme Court in *Graham v. John Deere and Co.*, 383 U.S. 1 (1966) set forth the factual inquiries which must be considered in applying the statutory test: (1) determining of the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of ordinary skill in the pertinent art, and (4) evaluate evidence of secondary considerations. The current USPTO Guidelines incorporate the mandate of *Graham* and directs the Examiner to set forth in the Office action the resolution of the factual inquiries of *Graham* and provide a rationale to support the rejection. The rejection must address all of the limitations of the claims.

### **Lack of Limitations**

Base claims 1 and 12 are defined as described above. Tümer does not teach all limitations of claims 1 and 12 as described above. Angelsen is not relied upon as disclosing the limitations deficient from Tümer. Therefore, the combination Tümer and Angelsen does not teach all elements of the claimed invention.

Claims 2-9 and 14-21 depend from base claims 1 and 12, respectively, and thus inherit all limitations of their respective base claim. Each of claims 2-9 and 14-21 sets forth features and limitations not recited by the combination of Tümer and Angelsen. Thus, the Applicant



respectfully asserts that for the above reasons claims 2-9 and 14-21 are patentable over the 35 U.S.C. § 103(a) rejection of record.

### **Rejection Under 35 U.S.C. § 103**

Claims 10-11, 13, and 22-24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Tümer in view of Knell.

The test for nonobvious subject matter is whether the differences between the subject matter and the prior art are such that the claimed subject matter as a whole would have been obvious to a person having ordinary skill in the art to which the subject matter pertains. The United States Supreme Court in *Graham v. John Deere and Co.*, 383 U.S. 1 (1966) set forth the factual inquiries which must be considered in applying the statutory test: (1) determining of the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of ordinary skill in the pertinent art, and (4) evaluate evidence of secondary considerations. The current USPTO Guidelines incorporate the mandate of *Graham* and directs the Examiner to set forth in the Office action the resolution of the factual inquiries of *Graham* and provide a rationale to support the rejection. The rejection must address all of the limitations of the claims.

### **Lack of Rationale**

The Office Action admits that Tümer does not teach having various limitations of the claims. The Office Action attempts to cure this deficiency by introducing Knell, which the Office Action alleges to teach having such limitations. The rationales for making the combination are presented as follows:

“It would have been obvious ... to modify Tümer to include an application comprising a transducer, a beam former, and a data path, and wherein the data path is in communication with the ASIC, the transducer, and the beam former to enable communication between the essential elements in the system.”  
Page 18.

“It would have been obvious ... to modify Tümer to include a first beam former, the data path, and a transducer array, wherein the ASIC, the first beam former, and the transducer array are in communication with the data path to provide an interconnection communication means.” Page 19.

“It would have been obvious ... to modify Tümer to include beam formers in communication with the data path, and operating the two beam formers and a transducer array to form multiple receive beams as disclosed by Knell [sic] to enable higher quality imaging and multiple imaging modes.” Page 20.

“It would have been obvious ... to modify Tümer to include programming the signal processing unit with code to provide a mode of functionality not originally included in the platform; and operating the signal processing unit to intercept and insert data along the number of points on the path, thereby instructing the platform to perform the mode to enable future flexibility ... and to serve as a tool to repair any software issues not found during the testing phase.” Page 22.

It is well settled that to facilitate review, the obvious rejection analysis should be made explicit. See *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006) ([R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007). Furthermore, Applicant notes that the Supreme Court further stated that “As is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art, *KSR Int’l Co. v. Teleflex Inc.* 127 S.Ct. 1727, 1741 (2007).

The Office Action does not provide any rational analysis as to the rationale to support the rejection. The Office Action merely provides conclusory statements without any supporting

analysis that details any articulated reasoning. In general, Applicant notes the Tümer is directed to nuclear applications involving high energy particle accelerators, and thus has no use for ultrasonic transducers and beam formers of Knell. Applicant notes that it is not necessary to include a transducer, a beam former, and a data path to “enable communication between the essential elements in the system” in Tümer. Applicant further notes that it is not necessary to include a beam former, the data path, and a transducer array to “provide an interconnection communication means” in Tümer. Applicant still further notes that Tümer is not directed to imaging, and thus does not need to “enable higher quality imaging and multiple imaging modes”. Applicant notes that operating the signal processing unit to intercept and insert data along the number of points on the path does not appear to be related to ensuring “future flexibility” or serving “as a tool to repair any software issues not found during the testing phase”.

Thus, none of the above rationales provided by the Office Action is proper, as a rationale must establish an articulated reasoning with some rational underpinning. Therefore, the rejection of claims 10-11, 13, and 22-24 should be withdrawn.

#### Lack of Limitations

Base claims 1 and 12 are defined as described above. Tümer does not teach all limitations of claims 1 and 12 as described above. Knell is not relied upon as disclosing the limitations deficient from Tümer. Therefore, the combination Tümer and Knell does not teach all elements of the claimed invention.

Claims 13 and 22-24 depend from base claims 1 and 12, respectively, and thus inherit all limitations of their respective base claim. Each of claims 13 and 22-24 sets forth features and limitations not recited by the combination of Tümer and Knell. Thus, the Applicant respectfully asserts that for the above reasons claims 13 and 22-24 are patentable over the 35 U.S.C. § 103(a) rejection of record.

**Rejection Under 35 U.S.C. § 103**

Claims 30-31 and 34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Knell in view of Kristoffersen (US App. 2005/0113698).

The test for nonobvious subject matter is whether the differences between the subject matter and the prior art are such that the claimed subject matter as a whole would have been obvious to a person having ordinary skill in the art to which the subject matter pertains. The United States Supreme Court in *Graham v. John Deere and Co.*, 383 U.S. 1 (1966) set forth the factual inquiries which must be considered in applying the statutory test: (1) determining of the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of ordinary skill in the pertinent art, and (4) evaluate evidence of secondary considerations. The current USPTO Guidelines incorporate the mandate of *Graham* and directs the Examiner to set forth in the Office action the resolution of the factual inquiries of *Graham* and provide a rationale to support the rejection. The rejection must address all of the limitations of the claims.

**Lack of Limitations**

Base claim 29 is defined as described above. Knell does not teach all limitations of claim 29 as described above. Kristoffersen is not relied upon as disclosing the limitations deficient from Knell. Therefore, the combination Knell and Kristoffersen does not teach all elements of the claimed invention.

Claims 30-31 and 34 depend from base claim 29, and thus inherit all limitations of claim 29. Each of claims 30-31 and 34 sets forth features and limitations not recited by the combination of Knell and Kristoffersen. Thus, the Applicant respectfully asserts that for the above reasons claims 30-31 and 34 are patentable over the 35 U.S.C. § 103(a) rejection of record.

**Conclusion**

In view of the above, Applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 06-2380, under Order No. 65744/P018US/10404217 from which the undersigned is authorized to draw.

Dated: July 14, 2008

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4).

Dated: July 14, 2008

Signature: 

Joy H. Perigo

Respectfully submitted,

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